

In re: Tsumori
Serial No.: 10/646,506
Filed: June 3, 2003
Attorney Docket No. 5576-151

REMARKS

Applicants appreciate the thorough examination of the present application as evidenced by the Final Action dated March 3, 2005. Claims 1–12 are pending in this application. Claims 3–12 are withdrawn as drawn to a non-elected invention. Applicants hereby request further consideration of the application in view of the amendment above and the comments below.

Support for Claim Amendments

The amendments presented above have been made to recite particular features of the inventions so as to expedite the prosecution of the present application to allowance in accordance with the USPTO Patent Business Goals (65 Fed. Reg. 54603, September 8, 2000). These amendments do not represent an acquiescence or agreement with any of the outstanding rejections.

Claim 1 is amended herein to more particularly define what Applicants regard as their invention. Applicants believe that the present amendments to Claim 1 introduce no new matter. Support for these claim amendments can be found throughout the specification and the original claims as filed. The rejections of the pending claims are discussed hereinbelow in the order that they are presented in the Action.

Claim Rejections-35 U.S.C. § 103(a)

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,248,416 (hereinafter, the '416 Patent) to Lambeth et al. in view of U.S. Patent No. 6,686,070 (hereinafter, the '070 Patent) to Futamoto et al. alone or taken in view of U.S. Patent No. 6,638,648 (hereinafter the '648 Patent) to Yamamoto et al. and U.S. Patent No. 6,356,406 (hereinafter the '406 Patent) to Takano et al. Applicant respectfully traverses this rejection.

The Examiner proposes that the '416 Patent teaches the magnetic recording disk medium, including perpendicular magnetic recording media, including a single crystal *Si* substrate (col. 8, lines 1–5) with a surface roughness (*Rms*) with the claimed 1–1000 nm limits (col. 15, line 66–col. 16, line 3). Applicants respectfully point out that the '416 Patent

teaches a single crystal Si substrate with an *Rms* of 4 Å (0.4 nm) (col. 15, line 66–col. 16, line 2). Applicants respectfully reiterate that the *Rms* of the single crystal Si substrate taught in the '416 Patent does not fall within the claimed limits of the single crystal Si substrate of the present invention.

The Examiner acknowledges that the invention of the '416 Patent differs from what has been claimed in that dimensions (diameter and thickness) of the magnetic recording disk substrate, metal underlayer and soft magnetic layer have not been expressed in the '416 Patent. However, the Examiner argues that the '070 Patent shows that the specific thickness and diameter in the claims are conventional in the art. The Examiner alleges that it would have been obvious to one of ordinary skill in the art to adopt the size preferences of the '070 Patent for the magnetic recording medium of the '416 Patent.

The '070 Patent proposes in Examples 1, 4 and 5 a perpendicular magnetic recording medium manufactured by direct-current magnetron sputtering using a substrate having a diameter of 2.5 inches, i.e., 63.5 mm. However, no thickness or *Rms* of the substrate is specified or suggested in the '070 Patent as is disclosed (thickness ≤ 1 mm with *Rms* of 1–1000 nm) in the claimed invention. The thickness of non-magnetic underlayers and soft magnetic layers proposed in Examples 1, 4 and 5 of the '070 Patent range from 3–10 nm and 5–200 nm, respectively. In view of the '070 Patent, Applicants amend Claim 1 herein such that the ranges of the thickness of the under-plated and soft magnetic layers no longer read on the thickness of these layers taught by the '070 Patent.

As amended herein, the present invention teaches a substrate for a magnetic recording disk comprising: an Si single crystal substrate having a diameter of ≤ 65 mm and a thickness of ≤ 1 mm and an *Rms* of 1–1000 nm; a metallic under-plated layer comprising one or more metals selected from the group consisting of Ni, Cu and Ag and having a thickness of < 10 –300 nm; and a plated soft magnetic layer having a thickness of < 200 nm–1000 nm, coercivity of ≤ 20 Oe, a saturation magnetization of ≥ 1 T, wherein the *Rms* of the soft magnetic layer is 0.1–5 nm. On page 6, lines 3–5 the Examiner suggests that Applicants have contrasted the instant claimed soft magnetic layer having 0.1–5 nm thickness while Futamoto et al. has 5–200 nm thickness. The 0.1–5 nm dimension of the instantly claimed invention refers to the *Rms* of the soft magnetic layer and not the thickness of the same. However, the present

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amendment provides for a soft magnetic layer of thickness < 200 to 1000 nm, which also does not read on the dimensions taught in the '070 Patent.

To establish a prima facie case of obviousness, Applicants reiterate that the prior art reference or references when combined must teach or suggest *all* the recitations of the claim, and there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. See M.P.E.P. § 2143. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. M.P.E.P. § 2143.01, citing *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990).

The Examiner alleges that one of skill in the art would have been motivated to adopt the product of the '648 Patent and the '406 Patent of plating for a magnetic recording medium with the expectation of increasing the density and precision of the recording media (col. 1, lines 13–15 of the '648 Patent and col. 1, lines 30–35 of the '406 Patent).

To support combining references, evidence of a suggestion, teaching, or motivation to combine must be clear and particular, and this requirement for clear and particular evidence is not met by broad and conclusory statements about the teachings of references. *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). The Court of Appeals for the Federal Circuit has also stated that, to support combining or modifying references, there must be particular evidence from the prior art as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000). Furthermore, as affirmed by the Court of Appeals for the Federal Circuit in *In re Sang-su Lee*, a factual question of motivation is material to patentability, and cannot be resolved on subjective belief and unknown authority. See *In re Sang-su Lee*, 277 F.3d 1338 (Fed. Cir. 2002). Applicants point out that none of the instant references provide clear and particular evidence to combine the instant reference teachings.

The Examiner cites *In re Aller*, 105 USPQ 233 in suggesting that discovering optimal or workable ranges involves only routine skill in the art. *In re Aller* finds that “[w]hen general conditions of a claim are disclosed in the prior art it is not inventive to discover the optimum or workable ranges by routine experimentation.”

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A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum working ranges of said variable might be characterized by routine experimentation. M.P.E.P. § 2144.05, citing *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). The parameters of the instant claims as amended herein, i.e., the dimensions and the *Rms* of the substrate, the thickness of the under-plated layer and the thickness of the soft magnetic layer of the present invention, are not within the parameters and workable ranges of all the dimensions taught in the cited art. Thus discovery of the ranges of the dimensions of the present invention would not have been routine to one of skill in the art.

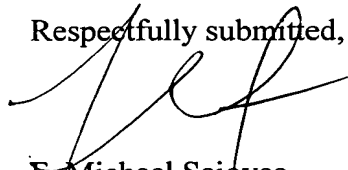
In view of the foregoing, Applicants assert that the instant claims are unobvious, and respectfully request that the instant rejection be withdrawn.

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CONCLUSIONS

The points and concerns raised by the Examiner in the outstanding Final Action have been addressed in full, it is respectfully submitted that this application is in condition for allowance. Should the Examiner have any remaining concerns, it is respectfully requested that the Examiner contact the undersigned Attorney at (919) 854-1400 to expedite the prosecution of this application to allowance.

Respectfully submitted,



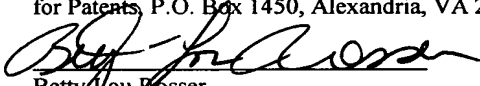
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